

Student Name: _____

QUALITY MANAGEMENT PROCESSES COURSE REGISTRATION FORM

PLEASE COMPLETE FORM **(One form per student)** AND FAX to 586.498.4101.

For more information, call Macomb's Workforce & Continuing Education Department at 586.498.4100.

Fundamentals of Quality						
	PDCA–Plan, Do, Check Act	8hrs.	CQLY 8173	4/20/20	\$ 295	
	Introduction to Waste Reduction	8hrs.	CQLY 8172	4/21/20	\$ 295	
	Introduction to Quality Gates	8hrs	CQLY 8171	4/22/20	\$ 295	
	Introduction to the International Quality Standards–ISO 9001–2015, TS16949, AS9100 & ISO14001	16hrs.	CQLY 8170	4/23–4/24/20	\$ 590	
Core Tools Training Certificate						
	APQP–Advanced Product Quality Planning	8hrs.	CQLY 8025	5/4/20	\$ 295	
	PPAP–Production Part Approval Process	8hrs	CQLY 8023	5/5/20	\$ 295	
	w/APQP/PPAP Workshop	8hrs	CQLY 8180	5/6/20	\$ 295	
	FMEA–Failure Mode and Effects Analysis	8hrs.	CQLY 8029	5/7/20	\$ 295	
	w/FMEA Workshop	8hrs.	CQLY 8181	5/8/20	\$ 295	
	MSA–Measurement System Analysis	8hrs.	CQLY 8008	5/11/20	\$ 295	
	w/MSA Workshop	8hrs.	CQLY 8182	5/12/20	\$ 295	
	SPC–Statistical Process Control	8hrs.	CSPC 8005	5/13/20	\$ 295	
	w/SPC Workshop	8hrs.	CSPC 8183	5/14/20	\$ 295	

Schedule is subject to change without notice.

Classes are held Mon–Fri 8am–4:30pm unless otherwise noted

**** Class runs Mon–Thurs 5:30pm–9:30pm**

Additional classes will be scheduled as needed.

Student Name: _____

Quality Management						
Problem Solving Tools	8hrs.	CMGT 8021A	2/20/20 6/8/20	\$ 295		
w/Problem Solving Tools Workshop	8hrs.	CQLY 8187	2/21/20 6/9/20	\$ 295		
5S–Standardized Work	8hrs.	CQLY 8081A	2/24/20 6/10/20	\$ 295		
w/5S–Standardized Workshop	8hrs.	CQLY 8179	2/25/20 6/11/20	\$ 295		
Quality Auditing Tools	16hrs.	CQLY 8169	2/26–2/27/20 6/15–6/16/20	\$ 590		
Lean Manufacturing Flow	8hrs.	CQLY 8135A	2/28/20 6/17/20	\$ 295		
w/Lean Six Sigma Quality Tool Workshop	8hrs.	CQLY 8186	3/2/20 6/18/20	\$ 295		
Quality Gate	8hrs.	CQLY 8168	3/3/20 6/19/20	\$ 295		
Quality Professional						
Visual Management	8hrs.	CQLY 8167	3/4/20	\$ 295		
w/5S and Visual Management Workshop	8hrs.	CQLY 8184	3/5/20	\$ 295		
Lean for Managers	8hrs.	CQLY 8140A	3/6/20	\$ 295		
Design of Experiment	16hrs.	CQLY 8157	3/9–3/10/20	\$ 590		
w/DOE Workshop	8hrs.	CQLY 8185	3/11/20	\$ 295		
Quality Management Processes Specialty						
<i>Call for additional courses to meet your training needs</i>						
TOTAL:						

Schedule is subject to change without notice.

Classes are held Mon–Fri 8am–4:30pm unless otherwise noted

**** Class runs Mon–Thurs 5:30pm–9:30pm**

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QUALITY MANAGEMENT PROCESSES PATHWAY

Macomb Community College's Michigan Technical Education Center (M-TEC) is the college's headquarters for its engineering and advanced technology workforce and continuing education team. The M-TEC is a 40,000-square-foot facility providing education and training in quality, advanced integrated manufacturing, automated systems, robotics, and CAD, in addition to many other training opportunities. We work across multiple industry sectors and in collaboration with employers to develop and deliver customized solutions addressing the technical talent pipeline at every level of an organization or industry sector.

Our Quality Management Processes program provides training and education that optimize performance and generate results in areas of problem-solving, quality improvement, waste reduction, lean and more to assist employers in implementing process enhancements. Students will strengthen their technical knowledge and gain a competitive edge at every level.

Macomb's Workforce Development Department is dedicated to supporting your company and improving our region's workforce with custom designed training, education, and certification programs.

Our experienced staff works with your HR professionals, subject matter experts, and organizational leaders to provide you with the proficiencies needed for today's fast-paced, global business environment. Courses can be conducted at our facility or yours. Receive a cost effective, customized training program that focuses on the strategic objectives of your business.



Discover Workforce Development at Macomb's M-TEC
Customized Training & Education • Engineering & Advanced Technology



QUALITY COURSE DESCRIPTIONS

*Classes are held Mon-Fri 8:00am-4:30pm unless otherwise indicated with ***

FUNDAMENTALS OF QUALITY

Plan, Do, Check, Act (PDCA) – CQLY 8173 – 8 hours

Prerequisite: None

You will learn the structured Plan-Do-Check-Act (PDCA) approach to problem solving. The PDCA problem solving process is a technique used to identify problems, analyze root causes and generate solutions. When combined with the basic quality tools, causes to business problems can be recognized and effective solutions can be put in place to prevent similar problems from recurring.

Introduction to Waste Reduction – CQLY 8172– 8 hours

Prerequisite: None

Understand the basics of the 5S Methodology: Sorting, Simplifying, Systematic Cleaning, Standardizing and Sustaining. Learn to discover, identify, eliminate and prevent waste using the 5S lean concepts and standardized work practices.

Introduction to Quality Gate – CQLY 8171– 8 hours

Prerequisite: None

Quality gates are designed to facilitate the detection, discussion and resolution of issues and problems through a collaborative effort to improve the quality of products. In this training, you will be introduced to the concept of Quality Gates, establishing one and the benefits of implementation.

Introduction to International Quality Standards – CQLY 8170– 16 hours

Prerequisite: None

This course will give an overview on the current industry International Quality Standards and review the differences between the Standards of ISO 9001:2015, TS16949, AS9100 & ISO14001.

CORE TOOLS TRAINING

APQP - Advanced Product Quality Planning – CQLY 8025 – 8 hours

Prerequisite: None

This eight (8) hour course focus' on the implementation and execution of APQP (Advanced Product Quality Planning) processes. APQP is a structured method of defining and establishing the steps necessary to ensure that a product satisfies the customer's needs. Effective product quality planning depends on a company's top management's commitment to the effort required in meeting customer specifications.

CORE TOOLS TRAINING (CONT.)

PPAP - Production Part Approval Process – CQLY 8023 – 8 hours

Prerequisite: None

This eight (8) hour course enables the student to learn the PPAP (Production Part Approval Process) and how to apply the voice of the customer (needs/wants/expectations). This course will give the participant a general understanding of the PPAP with emphasis on customer satisfaction; it is designed to show the participant how to build a PPAP based off facts and data and how to submit it to the customer.

FMEA – Failure Mode and Effects Analysis - CQLY 8029 – 8 hours

Prerequisite: None

This eight (8) hour course focus' on how FMEAs should be used during product and process development to identify function, potential failure of that function, effect of that failure, current controls to prevent failure, and prioritization of recommended actions. Participants should be Product and Process Designers and Engineers and others who will support the process, such as quality and management personnel.

MSA - Measurement System Analysis – CQLY 8008 – 8 hours

Prerequisite: None

This eight (8) hour course focus' on the fundamentals of MSA/GRR in both average (short) and average range (long) methods. Other analytical methods for attribute gauges and ANOVA will be discussed. Participants should be quality personnel or others responsible for implementation and proper conduct of MSA/GRR.

SPC - Statistical Process Control – CSPC 8005 – 8 hours

Prerequisite: None

This eight (8) hour course teaches the fundamentals of the planning, collection, and analysis of product and process data using variable control charts (Xbar & R) and process capability (Cpk.Ppk) calculations. Participants should be quality personnel or others responsible for the identification and implementation of product and process control.

QUALITY TOOLS APPLICATION

Blueprint Reading GDT and Math CGDT 8008 – 40 hour

Prerequisite: None

This forty (40) hour course is designed to provide the skills in blueprint reading, geometric dimensioning & tolerance, in conjunction with the fundamental math functions used in machining. The course will cover basic fractions and decimals as well as basic triangle and circle geometry relevant to the shop. The course provides an understanding of blueprints, and geometric dimensioning controls used on mechanical engineering drawings. Course topics include blueprint reading, dimensioning fundamentals, datums, and material condition symbols.



QUALITY TOOLS APPLICATION (CONT.)

Metrology & Coordinate Measuring Machine – CMM – CQLY 8178 - 24 hours

Prerequisite: None

This twenty-four (24) hour course will provide students the basic skills and understanding of the sciences of measurement. Through lecture and hands on exercises, the students will understand measurement instruments, scales, gages, micrometers, and calipers as well as CMM operation. Activities will include inspecting known good and known bad parts manually with hand held measurement devices, then loading the part in the CMM and programming the inspection, then comparing the results between the hand held gages and the CMM.

QUALITY MANAGEMENT

Problem Solving Tools and Techniques – CMGT 8021A– 8 hours

Prerequisite: None

The training will be a transition program for Managers, engineers, team leaders, production advisors, process engineers, production operators and others involved in investigating and resolving internal and external problems. It also covers effective approaches to developing, implementing or just upgrading a Problem-Solving system.

5S – Standardized Work– CQLY 8081A – 8 hours

Prerequisite: None

5S is a technique that results in a workplace that is clean, uncluttered, safe, and well organized. The 5S pillars provide a methodology for organizing, cleaning, developing, and sustaining a productive work environment. A 5S environment has “a place for everything and everything in its place,” with all tools and materials ready where and when they are needed. Learn how 5S can help reduce waste and optimize productivity in any work environment.

Quality Auditing Tools - CQLY 8169 – 16 hours

Prerequisite: None

This training focuses on methods and tools to conduct effective audits. The course will provide attendees with an understanding and the auditing techniques for the three auditing types 1) Product Audits 2) Process Audits and 3) System Audits. The course will provide an understanding of auditing tools such as the Gap Analysis, Layered Process Audits, and ISO/TS audits. In addition, give the student the instruments to convey audit results to internal and external customers and the means to improving audit scores.

Lean Manufacturing Flow - CQLY 8135A – 8 hours

Prerequisite: None

Learn the fundamentals of a Lean Manufacturing Flow through Value Stream Mapping (VSM) and Product Flow Development. Obtain understanding of the steps of creating the process family, documenting a current state map, developing a future state map and creating an implementation plan. Using these methods allows for synchronized product flow, with little waste, to meet your company and customers' needs for quality, cost and delivery objectives.

QUALITY MANAGEMENT (CONT.)

Quality Gate - CQLY 8168 – 8 hours

Prerequisite: None

Quality gates boost project quality by helping ensure that best practices are followed and measured against previous projects. In this course, you will learn about establishing a quality gate and the supportive tools that are required for a successful implementation of a quality gate.

QUALITY PROFESSIONAL

Visual Management – CQLY 8167– 8 hours

Prerequisite: None

You will learn types of Visual Management to improve quality performance and how to apply the visual tools to create a visual workplace, which will allow new and unfamiliar employees with a process/area.

LEAN for Managers – CQLY 8140 – 8 hours

Prerequisite: None

A comprehensive study of the Standard Production System and the identification of non-value-added manufacturing practices and the techniques used to eliminate them. Emphasis is placed on Lean Manufacturing Principles. This course will provide a roadmap to a successful systematic operational lean production system – leading to world class manufacturing. Become “First, Focused and Fast.” identifying waste daily, eliminating wastes immediately and finding more waste.

Obtain and Sustain High Level of Quality Performance - CQLY 8166 – 32 hours

Prerequisite: Quality Auditing Tools

In this thirty-two hour (32) workshop style course, you will review the necessary tools and techniques for obtaining and sustaining a high level of quality performance. Experiences will include in depth analysis of the Layered Process Audit content, e.g. how to ensure that the process can be sustained and each level of the audit process is impactful resulting in real change and follow up. Examples of how to set up quality gates and how to get engagement with them. How to develop an effective Lessons Learned program that results in better performance moving forward. Most importantly the gains that can be made if all involved Control the Things They Can Control

Design of Experiment-DOE – CQLY 8157 – 16 hours

Prerequisite: None

This sixteen (16) hour course has the student discover and utilize DOE as a process involving inputs, experimentation, and outputs. Learn to identify potential problems or optimize a process that involves the study of multiple parameters instead of one factor at a time (OFAAT).

QUALITY ANALYTICS WORKSHOPS

Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP) Workshop CQLY 8180 – 8 hours

Prerequisite: CQLY 8025 and CQLY 8023

This workshop builds on the key concepts taught in these two courses by also including templates, spreadsheets and macros for key (1) APQP Takeaways and techniques for effective planning (using PDSA), creating a phased Timing Chart; creation of detailed deliverables from all the APQP phases, Control Plan, Voice of the Customer, SIPOC, Process Flowcharts, DFMEA & PFMEA, MSA and (2) All Key PPAP Elements and Documents, including PSW, Engineering Change & Approval, Design Records and so many others; also (3) a high-level overview of all the Core Tools processes and procedures (FMEA, MSA, SPC); and finally (4) Key Facilitation & Communication skills and practices (i.e. brainstorming, consensus, team dynamics) to ensure success in APQP & PPAP.

Failure Mode & Effects Analysis (FMEA) - CQLY 8181 – 8 hours

Prerequisite: CQLY 8029

This workshop re-enforces the key concepts of FMEA by providing hands-on templates, Excel spreadsheets and macros to assist with (1) Process Mapping and Continuous Improvements; brainstorming Failure Modes and understanding the Pareto 80/20 Rule; also, (2) applying Risk Assessment, Root Cause Analysis (5 Why's & Fishbone Diagram), Corrective Actions and Counter Measures; also, (3) applying other Lean and Improvement tools (Force Field Analysis, Relationship Diagramming) and Data Mining and Analytics to reap the full benefits of conducting an FMEA; finally (4) Using the FMEA Start-up / Scoping form and the FMEA Worksheet with Severity, Occurrence and Detection to calculate the Risk Priority Number (RPN); discuss the updated standard.

Measurement Systems Analysis (MSA) - CQLY 8182 – 8 hours

Prerequisite: CQLY 8008

This fun, interactive and hands-on workshop brings the concepts of MSA alive by providing templates, macros and spreadsheets to assist with (1) evaluating your measurement system and performing a Gage R & R Study for Repeatability and Reproducibility. We teach you how to (2) mimic real-world application by understanding part variation and upper (USL) and lower (LSL) limits; also, by calculating and understanding the Number of Distinct Categories (NDC) how this impacts your Gage R & R Study; finally, we (3) show you how to understand variation Equipment, Appraiser, or Part and to understand Gage R& R System Acceptability.

QUALITY ANALYTICS WORKSHOPS (CONT.)

Statistical Process Control (SPC) - CSPC 8183 – 8 hours

Prerequisite: CSPC 8005

This workshop totally takes the fear out of Statistics. As with all other workshops, you use, macros, tools and various interactive techniques to assist with (1) achieving a high-level awareness of the measure of central tendencies and important concepts like the mean, median, mode, range, variance and standard deviation; (2) learn about more intermediate concepts such as using descriptive statistics, correlation and regression to better understand variance; and finally, (3) know and apply more advanced statistical and analytical techniques such as Histograms, Hypothesis testing and Chi Square to assist with analyzing and improving process defects and other quality issues.

Problem-Solving and Root-Cause-Analysis (RCA) - CQLY 8187 – 8 hours

Prerequisite: CMGT 8021A

This workshop takes the concept of problem-solving up a few notches, by not only providing fresh perspectives to some of the most common and popular approaches (i.e. Five Whys, Fishbone Diagram, Force Field Analysis), but it also teaches the theory and of course, the application of so newer, less common (but very effective) techniques for analyzing and solving problems. Some of these are: Dunker Diagrams, Pareto Analysis, the Morphological Matrix, Six Thinking Hats, Blink Method and many more. Finally, we weave in the link between effective problem-solving and other complimentary methods such a PDCA, DMAIC, Prioritizing and data mining and analytics.

Five “S”: Focusing on Standard Work (SW) - CQLY 8179 – 8 hours

Prerequisite: CQLY 8081A

This workshop builds on the high-level overview of Standard Work presented in the other Five “S” workshop. However, we also walk you through the application of all the key steps and suggested, such as: SW Combination Sheet, Takt time Calculator, Time Observation, Work Methods. We also ensure that you have an awareness and know the importance of SW frameworks, stability, quality assurance and importance documentation. We show you how to identify and apply key aspects of standardization such as Filling Out Work Instructions, Operation and Job Instruction and the Standard ‘Pig Game’. Finally, we help you learn and apply the Six Characteristics of Standard Work, Four Key Steps of SW and various methods and complimentary techniques (i.e. Kaizen, 5S, others) to increase productivity.

QUALITY ANALYTICS WORKSHOPS (CONT.)

Lean, Six Sigma and Quality Tools and Techniques Workshop – CQLY 8186 – 8 hours

Prerequisite: CQLY 8169 and CQLY 8135A

This exciting workshop combines the best and most popular tools and techniques of these categories and provides guidance on how to apply and receive the most benefit from them. We demonstrate and provide perspective on new ways of using those that have been around for a while (i.e. Cause and Effect, Force Field Analysis, Kano Analysis, Affinity Diagram, SWOT Analysis, various brainstorming approaches), while also introducing you to real-world scenarios (*from your own projects*) and application of other effective approaches such as Relationship Diagramming, Value Stream Mapping, Lean Takt Time and NVA, Voice of the Customer, Critical to Quality (CTQ) Tree, Defect Tracking and Analysis, Cost of Quality and Poor Quality, Sigma Calculation Worksheet and so many more. Of course, we discuss how to include data analytics with these techniques to really their effectiveness and application.

Five “S” and Visual Management – CQLY 8184 – 8 hours

Prerequisite: CQLY 8167

The focus of this workshop will primarily be on the key concepts of both Five “S” in general (Sort, Set-in-Order, Shine, Standardize, Sustain) and Visual Management, as well as a high-level overview Standard Work. For Five “S”, we will walk you through the practical application of all steps, from concept, to planning, through implementation and sustaining. We even provide a “real-world” analysis and simulation (‘Five S Field trip’) that allows for a more engaging and interactive learning environment. We also mimic a ‘real-world’ red-tag sort event to help you really appreciate this important component. For Visual Management, we teach you so many ways that this practical approach to using visuals in the home and work environments can help identify and eliminate waste. We show how these two concepts really complement each other.

Design of Experiment (DOE) – CQLY 8185 – 8 hours

Prerequisite: CQLY 8157

Design of Experiments is one of the most powerful tools for understanding and reducing variation in any process. In this very interactive and engaging workshop, we show you how to apply all key elements of DOE, including how to simultaneously test multiple factors that affect a process, service or product. We teach you how to identify and utilize other key components such as: Response Variables, Factors, Fractional Factorial, Full Factorials, Levels, Effects, Interaction and Repetition. We provide examples and help you run trials, runs and experiments to recognize Replication, Randomization and Resolution. Finally, we show you how to use various statistical data analytics and mining tools to interpret the results and to ultimately use this valuable information to reduce product and process variation.

QUALITY MANAGEMENT SPECIALTY COURSES

Creating a Quality Culture in the Workplace – CQLY 8141 – 16 hours

Prerequisite: None

This sixteen (16) hour course provides the skill to stop the cycle of “un-quality” in your organization and create a culture of behavioral change to quality in all associates; this explains to the team why there is a need to change and how they can approach work in a different manner. Develop a common lexicon for communication within your organization, develop a zero-defect mentality, acquire a systems thinking integration to your organization (all work is a process), and understand the validation of this achievement

Six Sigma Green Belt Certification - 56 hours plus project review

Prerequisite: None

This fifty-six (56) hour course will engage students in all aspects in becoming Six Sigma Green Belt certified using Lean Six Sigma methodologies. Students will discover, trouble shoot, utilize and implement tools and software to Define, Measure, Analyze, Improve, Control (DMAIC) and to ultimately complete a project to be reviewed by a Black Belt for certification. Students will have access to a Black Belt for review of their project beyond the fifty-six (56) classroom hours to successfully complete their project.

Six Sigma Green Belt OVERVIEW – CQLY 8019 – 40 hours

Prerequisite: None

This forty (40) hour course is based on the American Society for Quality’s (ASQ) CSSGB Body of Knowledge. Participants can expect to be fully engaged throughout this activity-based workshop while learning and applying the various tools and techniques used throughout the DMAIC approach to Six Sigma. Participants should expect to be continually challenged to explain and demonstrate how they will utilize the power and utility of Six Sigma to improve customer satisfaction and organizational performance. * **This is NOT a certification class.**

8D Problem Solving – CMGT 8021 – 12 hours

Prerequisite: None

This twelve (12) hour course teaches to use 8D analysis in an eight-step process to derive root cause and discover action steps to reduce or eliminate the causes that create inefficiencies and waste. The objective is to learn a methodical way to solve problems and evaluate the effectiveness.

Understanding 16949:2016 - CQLY 8163 - 8 hours

Prerequisite: None

This is a one-day course intended to develop an understanding for ISO 9001:2015 and IATF 16949:2016, including the process approach, and how it is necessary and valuable to your overall business management system. This course also provides an in-depth review of the changes from ISO/TS 16949:2009 to ISO 9001:2015 and IATF 16949:2016, changes from Rules 4th to Rules 5th, automotive auditing approaches, and transition planning.

QUALITY MANAGEMENT SPECIALTY COURSES (CONT.)

IATF 16949: 2016 Transition - CQLY 8162 - 16 hours

Prerequisite: None

This 2 day activity based IATF16949:2016 transition Training Course will give you an in-depth understanding on the differences from the ISO/TS16949:2009 requirements. In addition participants will gain an understanding on how to plan, prepare and implement the changes of the IATF16949:2016 Standard.

IATF 16949: 2016 Internal Auditor Workshop – CQLY 8165 – 24 hours

Prerequisite: None

This 24-hour workshop is intended for those personnel who have been identified as Internal Auditors for the companies IATF16949:2016 Quality Management System. Using the company's existing Quality Management System participants will learn the process approach to effective auditing. Workshop activities include the development of an audit schedule, audit checklist and practice audits. If time permits, and the companies schedule allows, participants will finish the workshop by conducting actual audits of the Quality Management System, write audit reports, and present these to management.

TS – 16949/ISO 9100 – CQLY 8164 - 32 hours

Prerequisite: None

TS 16949 is an internationally recognized Quality Management System specification for the automotive industry. TS 16949:2009 is the current version (last updated in the year 2009) of the standard that was developed for the Automotive Industry. It contains all of the requirements of ISO 9001 plus several additional requirements specifically for the Automotive Industry. This course gives an in-depth understanding of the TS 16949:2009 Audit Process. It has been specifically designed to meet the needs of the Auto Industry. Those responsible for planning and scheduling an audit program for TS 16949:2009 and those who must perform audits to TS 16949:2009 for quality assurance. Participants will understand the elements ISO-9001 Standard, the TS-16949 requirements, and a full depth understanding of the core tools.